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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/662,153	Applicant(s) FRENGER ET AL.	
	Examiner Ian N Moore	Art Unit 2661	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 September 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-28,32 and 34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3-28,32 and 34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Claim objections, on claims 1,17 and 30 are withdrawn since they are being amended accordingly.

2. Claim rejection of 35 USC 112 second paragraphs, on claims 1,9,14 and 22 are withdrawn since they are being amended accordingly.

3. The indicated allowability of claims 4-6,11-13, 18-21, 33 and 34 is withdrawn in view of the new reference(s).

4. Claims 1,3-14,17-18,22-23,28 are amended.

5. Claims 1, 3-28,32,34 are rejected by the new ground(s) of rejection necessitated by the amendment.

Claim Objections

6. Claims 1, 3 and 4 are objected to because of the following informalities: Appropriate correction is required.

Claim 1 recites "a second **different** type of transmission" in line 14 and "the second type retransmission" in line 15. For consistency, it is suggested to maintain the same claim language.

Claims 3 and 4 are also objected for the same reason as above.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-8,1013,23-28, and 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites, “**a** negative acknowledgement signal” in line 11. It is unclear whether “**a** negative acknowledgement signal” recite in line 11 is the same as “**a** negative acknowledgement signal” in line 8.

Claims 9 and 22 are rejected for the same reason as stated above.

Claim 5 recites the limitation "**the** third type **transmission**" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 6 recites the limitation "**the** third type **transmission**" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 13 recites the limitation "**the** third type transmission" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 14 recites, “when a negative acknowledgement signal is received,....**no** acknowledgement signal or **negative acknowledgement signal**...” in line 13,16-17. It is unclear whether “negative acknowledgment signal” or “no negative acknowledgment signal” in line 6-17 is received since a negative acknowledgement signal is already received in line 13.

Claim 17 and 18 are also rejected for the same reason as above.

Claims 2-4,7,8,10,13,23-28, and 34 are also rejected since they are depended upon rejected claim.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1,3-14,17-23,32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osthoff (WO 98/05140) in view of Fischer (U.S. 6,640,325) and in view of Jain (U.S. 6,434,114).

Regarding claim 1, Osthoff discloses for use in data packet transmissions between a transmitter (see FIG. 1a, Transmitter TM) and a receiver (see FIG. 1a, Receiver RC) where a data packet includes a first type of bits corresponding to actual information bits (see page 19, paragraph 2; information bits), and a second type of bits corresponding to parity bits (see page 19, paragraph 2; parity bits), the information bits being more important to decoding than the parity bits (page 19, paragraph 2), a method comprising:

detecting an error (see FIG. 3a, S6 (i.e. error Y) and S7 (i.e. Severe error N)) in a receive data packet (see FIG. 3a, step S5; see page 20, paragraph 2; see page 21, paragraph 1-4);

sending a signal (see FIG. 3a, step S11, request signal A; see page 21, paragraph 4) to the transmitter to trigger a first type of retransmission of the parity bits (see FIG. 3a, step S11, a first parity bit request A; see page 21, paragraph 4) to used in a subsequence decoding

operation at the receiver (see FIG. 3a, Step S13 and S14; decoding using parity bits; see page 22, paragraph 2-3 and page 23, paragraph 1);

detecting an severe error of a data packet (see FIG. 3a, S6 (i.e. error Y) and S7 (i.e. Severe error Y); see page 20, paragraph 2; see page 21, paragraph 1-4;

sending a signal to the transmitter (see FIG. 3a, Step S8; retransmission request towards transmitter) rather than a negative acknowledgment (note that retransmission is request is send from the receiver rather than a negative acknowledgment message); see page 21, paragraph 3;

in response to the sending of the signal, receiving from the transmitter a second different retransmission of the information bits of the packet (see FIG. 3b, S8, S4, S5, note that when transmitter receives retransmission request, it retransmits original information bits; see page 21, paragraph 3); and

decoding the send type retransmission (see FIG. 3a, Step S13 and S14; decoding the information bits; see page 22, paragraph 2-3 and page 23, paragraph 1).

Osthoff does not explicitly disclose a negative acknowledgement signal. However, the above-mentioned claimed limitations are taught by Fischer. Fischer discloses detecting an error in a received packet (see FIG. 3, step 310 (RX payload OK= No); see col. 8, lines 30-35), sending a negative acknowledged signal (see FIG. 3. step 314, generate negative acknowledgement; see FIG. 4, Step 404; see col. 8, lines 25-35) to the transmitter (see col. 7, lines 46-55; node 112) to trigger a retransmission (see col. 2, lines 3-15; see col. 3, lines 30-50)).

In view of this, having the system of Osthoff and then given the teaching of Fischer, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff, for the purpose of providing a negative acknowledgment message, as taught by Fischer, since Fischer states the advantages/benefits at col. 2, lines 11-19, that it would minimize the overhead cost of the network and time required to recover from packet due to lost errors in reduced. The motivation being that by providing the negative acknowledgment message due to error, it can improve the network performance.

Neither Osthoff nor Fischer explicitly discloses an absence of a lost data packet and a lost signal message, the lost signal message indicating that the lost data packet was detected as not received. However, the above-mentioned claimed limitations are taught by Jain. In particular, detecting an absence of a data packet (see FIG. 2, Packet Lost is detected);

sending a lost signal to the transmitter (see FIG. 2, retransmission request towards Switch 24) rather than a negative acknowledgment (note that retransmission is request is send from the combined system to switch 24 rather than a negative acknowledgment message; see col. 4, lines 45-59);

in response to the sending of the lost signal, receiving from the transmitter a first retransmission of the information bits of the data packet (see FIG. 2, note that when SW 24 receives retransmission message from the combined system, it retransmits the lost packet which comprises the information bits; see col. 4, lines 45-59); and

decoding the first retransmission (note that the combined system must decode the packet in order to determine if the packet is lost, and the retransmitted lost packet is received

by utilizing well-known mechanism such as CRC, FCS, Sequence numbers, or etc.); see col. 4, lines 45-59.

In view of this, having the combined system of Osthoff and Fischer, then given the teaching of Jain, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Osthoff and Fischer, for the purpose of sending a dispatch message for lost packet, as taught by Jain, since Jain states the advantages/benefits at see col. 4, lines 45-60, that it would provide a mechanism of a real time service of efficient retransmission. The motivation being that by sending retransmission request due to loss packet to the sender, it can improve the network performance by recovering the lost packet.

Regarding claim 9, Osthoff discloses a method of processing received encoded data packets (see FIG. 3a-b), each encoded data packet including first group of bits corresponding to actual information bits (see page 19, paragraph 2; information bits) and second group of bits corresponding to actual information bits (see page 19, paragraph 2; parity bits), where the information bits are more important to decoding the data packet than the parity bits (page 19, paragraph 2), comprising:

decoding (see FIG. 1a, ECM, Error Check Means of Receiver Rc) a received packet (see FIG. 1b, ST1, new packet) to produce an interim decoding results (see FIG. 1b, steps STS3 and ST5; or FIG. 3a, S6 or S7; a result of littler error or severe errors; note that a received packet is decoded in order to check for error to produce the result; see page 13, paragraph 4 and page 14, paragraph 1; page 17, paragraph 2-3; page 18, paragraph 2-3);

determing if the interim decoding results indicates an error in the received packet (see FIG. 1b, step ST3 and STS5 (i.e. little error=Y); FIG. 3a, S6 (i.e. error Y) and S7 (i.e. Severe error N); note that the result indicates that there is little error; see page 14, paragraph 3; see page 18, paragraph 2-3) and

determining if the interim decoding result is at or above the threshold (see FIG. 1b, step ST5 (i.e. little error Y) or FIG. 3a, S7 (i.e. server error N); note that in order to determine if there is a little error in the result, the result must be compared to a bench mark acceptable threshold; see page 17, paragraph 3 and page 18, paragraph 1; see page 20, paragraph 2; see page 21, paragraph 1-4)), sending a message signal (see FIG. 1b, ST 6; FIG. 3a, step S11, request signal A; see page 21, paragraph 4) to trigger a first type of retransmission of the parity bits ((see FIG. 3a, step S11, a first parity bit request A; after determining the result is within/at an acceptable threshold (i.e. at a level of steady improvement and a littler error threshold), a request is send to the transmitter to retransmit the additional parity bits; see page 18, paragraph 1-2; see page 21, paragraph 4);

if the interim decoding result is not above the threshold (see FIG. 3a, S6 (i.e. error Y) and S7 (i.e. Severe error Y); see page 20, paragraph 2; see page 21, paragraph 1-4), sending a signal message (see FIG. 1b, step ST7; see FIG. 3a, Step S8; retransmission request towards transmitter; after determining the result is <u>not</u> within/at a level of steady improvement and a littler error threshold (i.e. severe error since the error is not above the acceptable range/threshold)), rather than a negative acknowledgment (note that retransmission is request is send from the receiver rather than a negative acknowledgment message; see page 21, paragraph 3) to trigger a second type of retransmission of the information bits of the data

packet, the second type of retransmission being different from the first type of retransmission, receiving a second type of retransmission of the information bits of the data packet (see page 17, paragraph 3 and see page 18, paragraph 2-3; see FIG. 3b, S8, S4, S5, note that when transmitter receives retransmission request, it retransmits original information bits, and the receiver receives the information bits; see page 21, paragraph 3);

decoding the send type retransmission (see FIG. 3a, Step S13 and S14; decoding the information bits; see page 22, paragraph 2-3 and page 23, paragraph 1).

Osthoff does not explicitly disclose a negative acknowledgement signal. However, the above-mentioned claimed limitations are taught by Fischer. Fischer discloses producing an interim decoding result (see Fischer'325, see col. 1, lines 31-46; note that in order to determine the sequence number of a received packet (i.e. an interim decoding result), each received packet must be decoded);

determining if the interim decoding result is above a threshold (see Fischer'325, see col. 1, lines 31-46; note that a determination process is performed by comparing/matching sequenced numbers (i.e. an interim decoding result) in a series of packets with the pre-determined/threshold of sequence numbers);

if the interim decoding result indicates the interim decoding result is at or above the threshold (see Fischer'325, see col. 1, lines 31-46; note that when there is a gap (i.e. the received sequence number is above expected/threshold number) between the sequence number of received packets and the pre-determined/threshold of sequence numbers; (see FIG. 3, step 310 (RX payload OK= No); see col. 8, lines 30-35));

sending a negative acknowledgement signal (see FIG. 3. step 314, generate negative acknowledgement; see FIG. 4, Step 404; see col. 8, lines 25-35) to trigger a retransmission (see Fischer'325 FIG. 4, Step 404; see col. 2, lines 3-15; see col. 2, lines 3-15; see col. 3, lines 30-50; note that upon detecting error at the receiver, a negative acknowledgment is immediately sent to the transmitting node).

In view of this, having the system of Osthoff and then given the teaching of Fischer, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff, for the purpose of providing a negative acknowledgment message, as taught by Fischer, since Fischer states the advantages/benefits at col. 2, lines 11-19, that it would minimize the overhead cost of the network and time required to recover from packet due to lost errors in reduced. The motivation being that by providing the negative acknowledgment message due to error, it can improve the network performance.

Neither Osthoff nor Fischer explicitly discloses a lost signal message, the lost signal message indicating that the lost data packet was detected as absent. However, the above-mentioned claimed limitations are taught by Jain. In particular, decoding a received packet (see FIG. 2, the system must decode the received packet in order to determine if the packet is corrupted/lost/error; see FIG. 2, Packet Lost is detected); see col. 4, lines 45-59;

sending a lost signal message, the lost signal message indicating that the lost data packet was detected as absent (see FIG. 2, retransmission request towards Switch 24 due to loss of packet) rather than a negative acknowledgment signal (note that retransmission is

request is send from the system to switch 24 rather than a negative acknowledgment message); see col. 4, lines 45-59;

receiving a retransmission of the information bits of the data packet (see FIG. 2, note that when SW 24 receives retransmission message from the combined system, it retransmits the lost packet which comprises the information bits); and

decoding the retransmission (note that the combined system must decode the packet in order to determine if the packet is lost, and the retransmitted lost packet is received by utilizing well-known mechanism such as CRC, FCS, Sequence numbers, or etc.); see col. 4, lines 45-59.

In view of this, having the combined system of Osthoff and Fischer, then given the teaching of Jain, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Osthoff and Fischer, for the purpose of sending a dispatch message for lost packet, as taught by Jain, since Jain states the advantages/benefits at see col. 4, lines 45-60, that it would provide a mechanism of a real time service of efficient retransmission. The motivation being that by sending retransmission request due to loss packet to the sender, it can improve the network performance by recovering the lost packet.

Regarding Claim 14, Osthoff discloses an apparatus for use in a transmitter (see FIG. 1a, Transmitter TM), which transmits, data over a communications channel (see FIG. 1a, Transmission Link TL), comprising:

a signal processor (see FIG. 1a, a combined system of Parity bit Generator (PBGM) and packet encoder) configured to process data and generates corresponding systematic

information bits (see page 19, paragraph 2; information bits) and parity bits (page 19, paragraph 2; parity bits); see page 12, paragraph 1-2; see page 13, paragraph 4;

a combiner (see FIG. 1a, Transmitter Register means TRM) configured to selectively receive systematic (see FIG. 1a, information Bit-Transmitter (IB-T)) and parity bits (see FIG. 1a, parity bit-transmitter (PX-T)) and generate a coded data packet (see FIG. 1a, a coded packet is transmitted via TL); see page 12, paragraph 3 to see page 13, paragraph 1;

transceiving circuitry (see FIG. 1a, Transmission/reception means TR) configured to transmit coded data packets over the communications channel (see page 12, paragraph 3 to see page 13, paragraph 1);

a controller (see FIG. 1a, the combined system of transmitter controls means TCM, of Parity bit Generator (PBGM) and packet encoder) configured to control which bits are selected by the combiner to generate the coded data packet based on feedback (see FIG. 1a, ARQ; see page 14, paragraph 1) from a receiver (see FIG. 1a, Receiver RC); see page 12, paragraph 3 to see page 13, paragraph 1);

wherein when a retransmission signal is received (see FIG. 3a, step S11, request signal A; see page 21, paragraph 4), the controller is configured to send a first type of retransmission with parity bits (see FIG. 3a, step S11, a first parity bit A; see page 21, paragraph 4) over the communications channel to the receiver (see FIG. 3a, Step S13 and S14; see page 22, paragraph 2-3 and page 23, paragraph 1); and

when a signal message is received, or no acknowledgment or negative acknowledgement signal is received (see FIG. 3a, Step S8; retransmission request; see page 21, paragraph 3), the controller is configured to send a second type of retransmission (see

FIG. 3b, S8, S4, S5, information bits) with the systematic information bits over the communication channel to the receiver (see FIG. 3b, S8, S4, S5, note that when transmitter receives retransmission request, it retransmits information bits; see page 21, paragraph 3);

wherein the first type of retransmission (see FIG. 3a, step S11, a first parity bit; see page 21, paragraph 4) is different from the second type of retransmission (see FIG. 3b, S8, S4, S5, information bits; see page 21, paragraph 3).

Osthoff does not explicitly disclose a negative acknowledgement signal. However, the above-mentioned claimed limitations are taught by Fischer. Fischer discloses detecting an error in a received packet (see FIG. 3, step 310 (RX payload OK= No); see col. 8, lines 30-35), sending a negative acknowledged signal (see FIG. 3. step 314, generate negative acknowledgement; see FIG. 4, Step 404; see col. 8, lines 25-35) to the transmitter (see col. 7, lines 46-55; node 112) to trigger a retransmission (see col. 2, lines 3-15; see col. 3, lines 30-50)).

In view of this, having the system of Osthoff and then given the teaching of Fischer, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff, for the purpose of providing a negative acknowledgment message, as taught by Fischer, since Fischer states the advantages/benefits at col. 2, lines 11-19, that it would minimize the overhead cost of the network and time required to recover from packet due to lost errors in reduced. The motivation being that by providing the negative acknowledgment message due to error, it can improve the network performance.

Neither Osthoff nor Fischer explicitly discloses an absence of a lost data packet and a lost signal message, the lost signal message indicating that the lost data packet was detected as absent. However, the above-mentioned claimed limitations are taught by Jain. In particular, Jain teaches a lost signal message is received the transmitter, the lost signal message indicates that the data packet was detected as absent (see FIG. 2, Switch 24 receives retransmission message due to the Packet Lost; see col. 4, lines 45-59),

In view of this, having the combined system of Osthoff and Fischer, then given the teaching of Jain, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Osthoff and Fischer, for the purpose of sending a dispatch message for lost packet, as taught by Jain, since Jain states the advantages/benefits at see col. 4, lines 45-60, that it would provide a real time service of efficient retransmission. The motivation being that by sending retransmission request due to loss packet to the sender, it can improve the network performance by recovering the lost packet.

Regarding Claim 22, Osthoff discloses an apparatus for use in a receiver (see FIG. 1a, Receiver RC) which receives data over a communications channel (see FIG. 1a, Transmission Link TL), comprising:

transceiving circuitry (see FIG. 1a, Transmission/reception means TR) configured to receive a coded data packet transmitted over the communications channel (see page 12, paragraph 3 to see page 13, paragraph 1) by a transmitter (see FIG. 1a, Transmitter TM),

where an initially transmitted coded data packet includes a first type of bits corresponding to actual information bits (see page 19, paragraph 2; information bits) and a

second type of bits corresponding to parity bits (page 19, paragraph 2; parity bits; see page 12, paragraph 1-2; see page 13, paragraph 4), the information bits being more important to decoding than the parity bits (see FIG. 1a, ECM; page 19, paragraph 2);

packet processing circuitry ((see FIG. 1a, a combined system of Parity bit Request Means (PBRM) and Error Checking Means (ECM)) configured to detect the error (see FIG. 3a, S6 (i.e. error Y) and S7 (i.e. Severe error Y)) in a packet (see FIG. 3a, step S5; see page 20, paragraph 2; see page 21, paragraph 1-4) and to transmit the retransmitting message (see FIG. 3a, Step S8; retransmission request towards transmitter) to the transmitter (see page 20, paragraph 2; see page 21, paragraph 1-4) rather than a negative acknowledgment signal (note that retransmission is request is send from the receiver rather than a negative acknowledgment message); see page 21, paragraph 3;

and thereafter, to decode a first retransmission of the expected packet which includes the information bits ((see FIG. 3a, Step S6 and S7; decoding the information bits to check for errors; see page 22, paragraph 2-3 and page 23, paragraph 1);

wherein if decoding of the first retransmission is not successful (see FIG. 3a, S6 (i.e. error Y) and S7 (i.e. Severe error N) in the information bits; see FIG. 3a, step S5; see page 20, paragraph 2; see page 21, paragraph 1-4), the packet processing circuitry is configured to send a signal (see FIG. 3a, step S11, request signal A; see page 21, paragraph 4) to the transmitter, and is response, a second retransmission is received including a set of parity bits without the information bits (see FIG. 3a, step S11, a first parity bit A; see page 21, paragraph 4; see page 22, paragraph 2-3 and page 23, paragraph 1).

Osthoff does not explicitly disclose a negative acknowledgement signal. However, the above-mentioned claimed limitations are taught by Fischer. Fischer discloses detecting an error in a received packet (see FIG. 3, step 310 (RX payload OK= No); see col. 8, lines 30-35), sending a negative acknowledged signal (see FIG. 3. step 314, generate negative acknowledgement; see FIG. 4, Step 404; see col. 8, lines 25-35) to the transmitter (see col. 7, lines 46-55; node 112) to trigger a retransmission (see col. 2, lines 3-15; see col. 3, lines 30-50)).

In view of this, having the system of Osthoff and then given the teaching of Fischer, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff, for the purpose of providing a negative acknowledgment message, as taught by Fischer, since Fischer states the advantages/benefits at col. 2, lines 11-19, that it would minimize the overhead cost of the network and time required to recover from packet due to lost errors in reduced. The motivation being that by providing the negative acknowledgment message due to error, it can improve the network performance.

Neither Osthoff nor Fischer explicitly discloses an absence of a lost data packet and a lost signal message, the lost signal message indicating that the lost data packet was detected as absent. However, the above-mentioned claimed limitations are taught by Jain. In particular, Jain teaches a lost signal message is received the transmitter, the lost signal message indicates that the data packet was detected as absent (see FIG. 2, Switch 24 receives retransmission message due to the Packet Lost; see col. 4, lines 45-59),

In view of this, having the combined system of Osthoff and Fischer, then given the teaching of Jain, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Osthoff and Fischer, for the purpose of sending a dispatch message for lost packet, as taught by Jain, since Jain states the advantages/benefits at see col. 4, lines 45-60, that it would provide a real time service of efficient retransmission. The motivation being that by sending retransmission request due to loss packet to the sender, it can improve the network performance by recovering the lost packet.

Regarding claims 3 and 10, the combined system of Osthoff, Fischer and Jain discloses all aspects of the claimed invention set forth in the rejection of Claim 1 and 9 as described above. Osthoff discloses wherein the second retransmission also includes a first set of the parity bits of the data packet (see FIG. 3b, S8, S4, S5, note that when transmitter receives retransmission request, it retransmits complete retransmission of entire packet which consists the parity bits from unsuccessfully transmitted packet; see page 21, paragraph 3). Jain'114 discloses wherein the retransmission also includes a first set of the parity bits of the data packet (see FIG. 2, note that when SW 24 receives retransmission message from the combined system, it retransmits the lost packet which comprises the header/trailer bits such as parity bits for error detection/correction).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff as taught by Jain for the same reason stated in Claim 1 and 9 above.

Regarding Claims 4 and 11, the combined system of Osthoff, Fischer and Jain discloses all limitations as described in claim 1 and 9. Osthoff further discloses if the decoding of the second type retransmission is not successful (see FIG. 3a, S15, still error Y), sending a signal to the transmitter (see FIG. 3b, S18, Second parity request B); see page 23, paragraph 3 to page 24, paragraph 1;

receiving from the transmitter a third type of retransmission (see FIG. 3b, S20, receiving parity bits PB from RECORD-B) including a second set of the parity bits (see FIG. 3b, S20, new parity bits PB from RECORD-B) different from the first (see FIG. 3a, S13, parity bit PA from RECORD-A; note PA and PB bits are different since PB is new; see page 24, paragraph 2-3);

decoding the data packet using information from the second and third type retransmissions (see FIG. 3b, S21, error correction using PB bits; see page 24, paragraph 3 and see page 25, paragraph 1-2). Fischer discloses sending negative acknowledgment signal as described above in claim 1. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff as taught by Fischer for the same reason stated in Claims 1 and 9 above.

Regarding Claims 5 and 12, the combined system of Osthoff, Fischer and Jain discloses all limitations as described in claim 1 and 9. Osthoff further discloses wherein the third type transmissions do not include the information bits or only includes the second set of parity bits (see FIG. 3b, S20, new parity bits PB from RECORD-B are retransmitted without information bits; see page 24, paragraph 2-3).

Regarding Claims 6 and 13, the combined system of Osthoff, Fischer and Jain discloses all limitations as described in claim 1 and 9. Osthoff further discloses retransmission includes both information bits and parity bits as described above in claim 1 and 9. Osthoff further discloses wherein the third type transmission includes the second set of parity bits (see FIG. 3b, S20, new parity bits PB from RECORD-B are retransmitted; see page 24, paragraph 2-3). Jain also discloses retransmission includes both information bits and parity bits as described above in claim 1 and 9. Thus, the combined system of Osthoff, Fischer and Jain discloses can retransmit the new second set parity bits along with information bits. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff as taught by Jain for the same reason stated in Claims 1 and 9 above.

Regarding claim 7, the combined system of Osthoff, Fischer and Jain discloses detecting absent of a data packet as described above in claim 1. Fischer further discloses lost/absent of a data packet determining that a packet with a particular identifier expected to be received has not received in an expected time period (see col. 1, lines 31-46; note that a data packet lost is determined when there is a gap in a sequence number of received packet, and a lost packet is discovered via a software timeout (i.e. not receiving in a expected time period). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff taught by Fischer for the same reason stated in Claim 1 above.

Regarding claim 8, the combined system of Osthoff, Fischer and Jain discloses detecting absent of a data packet as described above in claim 1. Fischer further discloses an

absent/lost packet by comparing a decoding result for the packet with a threshold (see col. 1, lines 31-46; note that a data packet lost is determined by comparing/matching sequenced numbers (i.e. decoding result) in a series of packets with the pre-determined/threshold of sequence numbers in order to identify the gap. In order to determine the sequence number of a received packet (i.e. a decoding result), the packet must be decoded.) Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff taught by Fischer for the same reason stated in Claim 1 above.

Regarding claim 17, the combined system of Osthoff, Fischer and Jain discloses wherein when a lost signal is received or no acknowledgment or negative acknowledgment signal is received, the systematic information bits are retransmitted over the communications channel to the receiver as described above in claim 14. Osthoff discloses retransmitting systematic information bits along with parity bits originally transmitted with the systematic information bits (see FIG. 3b, S8, S4, S5, note that when transmitter receives retransmission request, it retransmits complete retransmission of entire packet which consists the parity bits from unsuccessfully transmitted packet and systematic information bits; see page 21, paragraph 3). Jain further discloses retransmitting systematic information bits along with parity bits originally transmitted with the systematic information bits (see FIG. 2, Packet Lost and retransmission request; see col. 4, lines 46-59; note that upon detection a lost packet retransmission request message, SW 24 retransmits the packet entire packet. Thus, it is clear that retransmitted packet contains both information bits and parity bits that were sent originally).

Regarding Claim 18, the combined system of Osthoff, Fischer and Jain discloses wherein when a lost signal is received or no acknowledgment or negative acknowledgment signal is received, the systematic information bits are retransmitted over the communications channel to the receiver as described above in claim 14. Osthoff discloses retransmitting systematic information bits along with parity bits with the systematic information bits (see FIG. 3b, S8, S4, S5, note that when transmitter receives retransmission request, it retransmits complete retransmission of entire packet which consists the parity bits and systematic information bits; see page 21, paragraph 3). Osthoff further discloses sending parity bits different from the parity bits originally transmitted (see FIG. 3a, S13, parity bit PA from RECORD-A; note PA and PB bits are different since PB is new; see page 24, paragraph 2-3). Jain also discloses retransmission includes both information bits and parity bits as described above in claim 1 and 9. Thus, the combined system of Osthoff, Fischer and Jain discloses can retransmit the new second set parity bits along with information bits. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff as taught by Jain for the same reason stated in Claims 1 and 9 above.

Regarding Claim 19, the combined system of Osthoff, Fischer and Jain discloses wherein the systematic information bits are retransmitted, and a negative acknowledgment signal is received in response to the retransmission as described above in claim 14. Osthoff further discloses parity bits associated with the systemic information bits are retransmitted over the communication channel to the receiver without the systematic information bits (see

FIG. 3b, S20, new parity bits PB from RECORD-B are retransmitted without systematic information bits; see page 24, paragraph 2-3).

Regarding claim 20, the combined system of Osthoff, Fischer and Jain discloses all aspects of the claimed invention set forth in the rejection of Claim 14 as described above. Osthoff discloses when a retransmission signal is received; the systematic information bits are retransmitted over the communication channel to the receiver along with parity bits (see FIG. 3b, S8, S4, S5, note that when transmitter receives retransmission request, it retransmits complete retransmission of entire packet which consists the parity bits and systematic information bits; see page 21, paragraph 3). Jain'114 discloses wherein the retransmission also includes information bits and the parity bits (see FIG. 2, note that when SW 24 receives retransmission message from the combined system, it retransmits the lost packet which comprises the header/trailer bits such as parity bits for error detection/correction). Fischer discloses sending/receiving negative acknowledge signal. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Osthoff as taught by Fischer and Jain for the same reason stated in Claim 14 above.

Regarding claim 21, the combined system of Osthoff, Fischer and Jain discloses all aspects of the claimed invention set forth in the rejection of Claim 14 as described above. Osthoff discloses when a signal is receive, parity bits are transmitted over the communication channel to the receiver without the systematic information bits (see FIG. 3a, step S11, a first parity bit A without the information bits; see page 21, paragraph 4; see page 22, paragraph 2-3 and page 23, paragraph 1). Fischer discloses sending/receiving negative acknowledge

signal. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff as taught by Fischer for the same reason stated in Claim 14 above.

Regarding Claim 23, the combined system of Osthoff, Fischer and Jain discloses sending a lost signal to the transmitter when there is an absent of the packet as described in claim 22. Osthoff further discloses wherein the packet processing circuitry includes:

a decoder (see FIG. 1, the combined system of Receiver Register Means (RRM) and Error Checking Means (ECM)) for decoding a received data packet (see FIG. 3a, Step S6 and S7; decoding the information bits to check for errors; see page 22, paragraph 2-3 and page 23, paragraph 1), and

wherein if the data packet cannot be properly decoded (see FIG. 3a, S6 (i.e. error Y) and S7 (i.e. Severe error N) in the information bits; see FIG. 3a, step S5; see page 20, paragraph 2; see page 21, paragraph 1-4)), a message (see FIG. 3a, step S11, request signal A; see page 21, paragraph 4) is sent to the transmitter (see page 21, paragraph 4; see page 22, paragraph 2-3 and page 23, paragraph 1). Fischer discloses sending a negative acknowledge/request is sent to the transmitter and Jain discloses sending a retransmission message for loss of packet. Thus, it is clear that Jain's lost signal message can also be sent when the received packet data is entirely corrupted since it will be impossible to recover/perform the error correction. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff as taught by Fischer and Jain for the same reason stated in Claim 22 above.

Regarding claim 32, the combined system of Osthoff, Fischer and Jain discloses all aspects of the claimed invention set forth in the rejection of Claim 22 as described above. Osthoff discloses wherein the first retransmission also includes a first set of the parity bits of the data packet (see FIG. 3b, S8, S4, S5, note that when transmitter receives retransmission request, it retransmits complete retransmission of entire packet which consists the parity bits from unsuccessfully transmitted packet; see page 21, paragraph 3). Jain'114 discloses wherein the retransmission also includes a first set of the parity bits of the data packet (see FIG. 2, note that when SW 24 receives retransmission message from the combined system, it retransmits the lost packet which comprises the header/trailer bits such as parity bits for error detection/correction). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff as taught by Jain for the same reason stated in Claim 22 above.

Regarding claim 34, the combined system of Osthoff, Fischer and Jain discloses all aspects of the claimed invention set forth in the rejection of Claim 22 as described above. Osthoff discloses the second retransmission. Osthoff also discloses wherein the retransmission also is received including the information bits and the parity bits of the data packet (see FIG. 3b, S8, S4, S5, note that when transmitter receives retransmission request, it retransmits complete retransmission of entire packet which consists the parity bits from unsuccessfully transmitted packet; see page 21, paragraph 3). Jain'114 discloses wherein the retransmission also includes including the information bits and the parity bits of the data packet (see FIG. 2, note that when SW 24 receives retransmission message from the combined system, it retransmits the lost packet which comprises the header/trailer bits such

as parity bits for error detection/correction). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the system of Osthoff as taught by Jain for the same reason stated in Claim 22 above.

11. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osthoff, Fischer and Jain, as described above in claim 14, and further in view of Eroz (U.S. 6,370,669).

Regarding claim 15, the combined system of Osthoff, Fischer and Jain discloses the signal processor and combiner as a combined system as disclosed above in claim 14.

Neither Osthoff, Fischer, nor Jain explicitly discloses using a turbo encoder. However, the above-mentioned claimed limitations are taught by Eroz'669. In particular, Eroz'669 teaches discloses using a turbo encoder (see FIG. 2, Turbo code encoder 208; see col. 2, line 42 to col. 3, line 52 and see col. 6, line 19-52). In view of this, having the combined system of Osthoff, Fischer and Jain, and then given the teaching of Eroz'669, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Osthoff, Fischer and Jain, by providing a turbo encoder, as taught by Eroz'669. The motivation to combine is to obtain the advantages/benefits taught by Eroz'669 since Eroz'669 states at col. 2, line 140 that such modifications would minimize implementation complexity and increase the redundancy scheme in the CDMA network.

Regarding claim 16, Osthoff discloses the communication channel is the radio channel (see FIG. 1a, TL link; see page 4, paragraph 2; GSM and D-AMPS system; see FIG. 9).

12. Claims 24 and 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Osthoff, Fischer, and Jain, as described above in claim 22, and further in view of Kalliojarvi (U.S. 6,438,723).

Regarding claim 24, the combined system of Osthoff, Fischer, and Jain discloses all aspects of the claimed invention set forth in the rejection of Claim 22 as described above, and further teaches the pack processing circuitry.

Neither Osthoff, Fischer, nor Jain explicitly discloses a buffer for storing received data packet information; a combiner for combining buffer information with retransmitted information; a decoder for decoding an output of the combiner; and a controller coupled to the buffer, combiner, and decoder.

However, the above-mentioned claimed limitations are taught by Kalliojarvi'723. In particular, Kalliojarvi'723 teaches a buffer for storing received data packet information (see FIG. 6, RX Buffer 603);

a combiner for combining buffer information with retransmitted information (see FIG. 6, RX Buffer 603 which has combination functionality);

a decoder for decoding an output of the combiner (see FIG. 6, the combined decoding system of EC decoder 603 and ED decoder 605); and

a controller (see FIG. 6, the combined system of Retransmission Control 606 and Metrics Memory 604) coupled to the buffer, combiner, and decoder. Also, see col. 12, line 52 to col. 13, line 12.

In view of this, having the combined system of Osthoff, Fischer, and Jain, and then given the teaching of Kalliojarvi'723, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Osthoff, Fischer, and Jain, by providing detailed components of the processing unit, as taught by Kalliojarvi'723. The motivation to combine is to obtain the advantages/benefits taught by Kalliojarvi'723 since Kalliojarvi'723 states at col. 2, line 40-54 that such modification would increase good efficiency and acceptable robustness against error in the packet transmission.

Regarding claim 26, the combined system of Osthoff, Fischer, Jain and Kalliojarvi'723 discloses all aspects of the claimed invention set forth in the rejection of Claim 24 as described above, and Osthoff further teaches the pack processing circuitry utilizing the adaptive ARQ/FEC techniques for transmission (see Osthoff page 5, paragraph 5). Also, Kalliojarvi'723 teaches that packet processor includes the buffer and the combiner. Thus, it is clear that the buffer and the combiner perform an incremental redundancy operation, which is performed by the redundancy scheme such as ARQ between the transmitter and receiver. In view of this, having the combined system of Osthoff, Fischer and Jain, and then given the teaching of Kalliojarvi'723, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Osthoff, Fischer and Jain, by applying the ARQ redundancy operation in the buffer and combiner, as taught by Kalliojarvi'723 for the same motivation as stated above in claim 24.

Regarding claim 27, the combined system of Osthoff, Fischer, Jain and Kalliojarvi'723 discloses all aspects of the claimed invention set forth in the rejection of

Claim 24 as described above. Osthoff discloses decoder performs error correction ((see FIG. 1, the combined system of Receiver Register Means (RRM) and Error Checking Means (ECM)) and the packet processing circuit further detects errors in the output of the decoder (see page 22, paragraph 2-3 and page 23, paragraph 1). Kalliojarvi'723 further teaches the decoder performs error correction (see FIG. 6, EC Decoder 603, i.e., error correcting decoder) and the packet processing circuit further detects errors in the output of the decoder. (See FIG. 6, ED Decoder, i.e., error detecting decoder at the output of the error correction decoder; and col. 12, line 52 to col. 13, line 12).

Regarding claim 28, the combined system of Osthoff, Fischer, Jain and Kalliojarvi'723 discloses all aspects of the claimed invention set forth in the rejection of Claim 24 as described above. Osthoff discloses if the decoder output is not acceptable (see FIG. 3a, S6 (i.e. error Y) and S7 (i.e. Severe error N); see FIG. 3a, step S5; see page 20, paragraph 2; see page 21, paragraph 1-4); the ECM result is not acceptable due to error), the controller sends a signal (see FIG. 3a, step S11, request signal A; see page 21, paragraph 4) to the transmitter (see page 21, paragraph 4; see page 22, paragraph 2-3 and page 23, paragraph 1). Fischer further teaches sending a negative acknowledgment signal to the transmitter as described above in claim 22. Kalliojarvi'723 also teaches wherein if the decoder output is not acceptable, the controller sends a signal to the transmitter (see FIG. 6, Retransmission Control and the ED Decoder 605; and col. 12, line 52 to col. 13, line 12; note that if the errors are detected after being corrected, they are forwarded to retransmission unit, and retransmission unit sends the request back to the transmitter unit).

In view of this, having the combined system of Osthoff, Fischer and Jain and then given the teaching of Kalliojarvi'723, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of Osthoff, Fischer and Jain, by sending a request/signal to the transmitter if erroneous data packet is detected after being corrected for retransmission, as taught by Kalliojarvi'723 for the same motivation as stated above in claim 24.

13. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Osthoff, Fischer, Jain, and Kalliojarvi'723 as applied to claim 22 and 24 above, and further in view of Eroz.

Regarding claim 25, the combined system of Osthoff, Fischer, Jain and Kalliojarvi'723 discloses all aspects of the claimed invention set forth in the rejection of Claims 22 and 24 as described above, and further teaches the decoder.

Neither Osthoff, Fischer, Jain, nor Kalliojarvi'723 explicitly the decoder is a turbo decoder. However, the above-mentioned claimed limitations are taught by Eroz'669. In particular, Eroz'669 teaches discloses using a turbo encoder (see FIG. 2, Turbo code encoder 232; see col. 2, line 42 to col. 3, line 52 and see col. 6, line 19-52).

In view of this, having the combined system of Osthoff, Fischer, Jain, and Kalliojarvi'723, then given the teaching of Eroz'669, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the combined system of 1, Fischer, Jain, and Kalliojarvi'723, by providing turbo decoder, as taught by Eroz'669. The motivation to combine is to obtain the advantages/benefits taught by Eroz'669

since Eroz'669 states at col. 2, line 140 that such modifications would minimize implementation complexity and increase the redundancy scheme in the CDMA network.

Response to Arguments

14. Applicant's arguments with respect to claim 1,3-28,32 and 34 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian N Moore whose telephone number is 571-272-3085. The examiner can normally be reached on M-F: 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on 571-272-3078. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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